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THE DURABILITY AND HARDNESS OF METALS

GOLD, PLATINUM, SILVER AND METALS MOH'S SCALE OF HARDNESS

Posted on September 12, 2010 by Richard Scott

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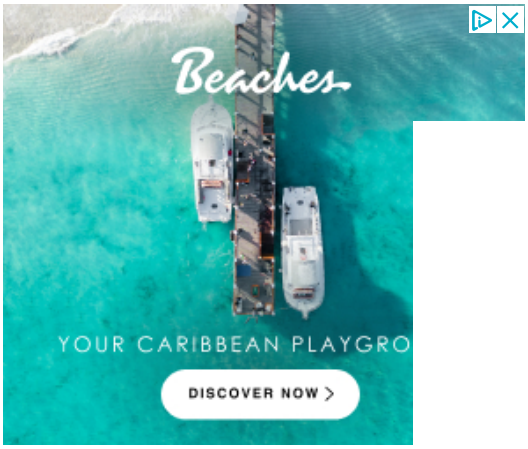
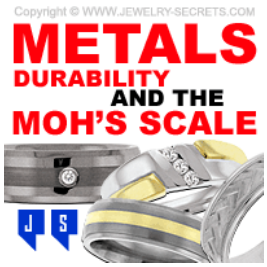


The Hardness of Metals used for Jewelry varies quite a bit.



You'll notice this when you look at your rings and see **scratches**. The ability to scratch an item depends on how durable or hard the item is.

The harder the item, the less it will scratch!

The fact is; most Metals are fairly soft and can be scratched or dented easily. Anything that comes in contact with Jewelry that is harder than the Jewelry has the potential to scratch it.

The Moh's Scale of Hardness

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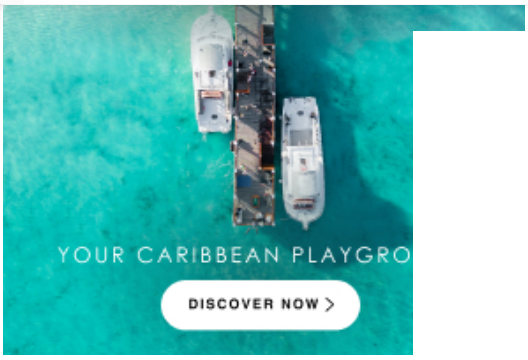
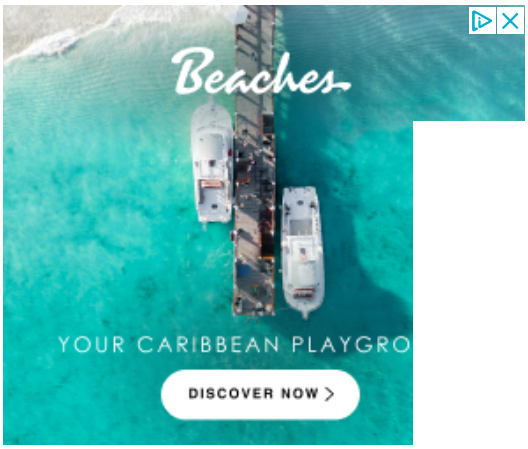


The Moh's Scale of Hardness ranks minerals, materials, metals and Gemstones on a scale of 1-10. 10 being the best and the most durable… **Diamond is a 10**.

Gold and Silver on the other hand are only a 2.5 – 3 on the Moh's Scale. **They are fairly easy to work with** (Jewelers love it) because they are so malleable. But, this also makes them bend, wear down and break easily. **Not good!** Especially since it's holding in your Diamonds and Gems.

This is why most Jewelry found on the market is mixed with other Alloys that help **strengthen the Metal**.

14k Gold is 14 parts Gold and 10 parts Alloy. 10k Gold is 10 parts Gold and 14 parts Alloy. Even Platinum isn't exactly pure. It's 99.5% pure…



Base Metals and Alloys

Base Metals are a mix of various Metals that are used for **Alloys**. They are usually made up of small percentages of Metals like Nickel, Silver, Copper and Zinc.

Almost all Metals used in Jewelry are mixed with some Alloys to make them stronger and easier to work with.

Some Metals, like White Gold, are then **Rhodium Plated** (Durable White Metal) that makes it even more durable and whiter at the same time.

Take a look below and see the various metals like Platinum, Palladium, Titanium, Tungsten, Brass, Steel, Copper, Gold and Silver to see how they stack up to each other in terms of hardness.

Keep in mind, this chart shows how strong the Metals are in their **Pure State**… Which

The Metals Scale of Hardness

- **Lead – 1.5**
- **Tin – 1.5**
- **Zinc – 2.5**
- **Gold – 2.5 – 3**
- **Silver – 2.5 – 3**
- **Aluminum – 2.5 – 3**
- **Copper – 3**
- **Brass – 3**
- **Bronze – 3**
- **Nickel – 4**
- **Platinum – 4 – 4.5**
- **Steel – 4 – 4.5**
- **Iron – 4.5**
- **Palladium – 4.75**
- **Rhodium – 6**
- **Titanium – 6**
- **Hardened Steel – 7 – 8**
- **Tungsten – 7.5**
- **Tungsten Carbide – 8.5 – 9**

Metal Hardness is usually defined by **the Rockwell Hardness Test**. But when we are dealing with Jewelry, most people are more familiar with the Moh's Scale.

Top 5 Durable Metals

From the list, you can see that the **Top 5 Durable Metals** used for Jewelry are:

1. **Platinum 4 – 4.5**
2. **Titanium 6**
3. **Hardened Steel 7 – 8**
4. **Tungsten 7.5**
5. **Tungsten Carbide 8.5 – 9**

Platinum is hard (twice as hard as Gold), but there are 4 other Metals that are harder!

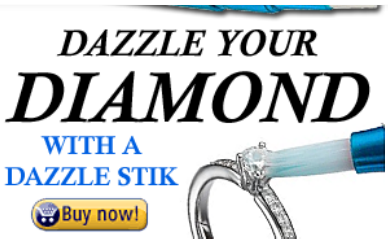
The harder the Metal, the longer it will last.

Do note that these harder Metals also have a tendency **to be more expensive** (like Platinum). Plus, when the Metal gets really hard, it makes it tougher for the Jeweler to work on it. Even a simple polishing can take **hours**. Some Metals, like **Tungsten and Tungsten Carbide can't even be repaired or sized**. They have to be ordered in the correct size.

Think about that the next time you decide to lose some weight… (or gain some). **It could be costly!**

So you see, Durability is a great thing, **but it does have some set backs!**

Recommended Jewelry Supplies:



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1 Comment on THE DURABILITY AND HARDNESS OF METALS

Tara Hazra // December 28, 2020 at 5:20 pm // Reply

I wearing cooper ring and 18k gold ring in same finger. I have found some scratch on gold ring. If I using regular basis, is it loss gold quantity? Look forward for your suggestions.

« 1 2

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